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ABSTRACT

Ten children (4- to 7-years-old) receiving articulation and language therapy and their student clinicians were evaluated on the Analysis of Behavior of Clinicians System to determine the length of time necessary to obtain a representative sample of clinician-client interaction during a therapy session. Approximately 10 minutes after the clinician and the client entered the experimental room, a video tape recording was made of a 15-minute segment of each therapy session. Data indicated that no significant difference existed between the behavioral patterns of clinician-client interaction when five 3-minute segments of recorded clinician-client interaction were compared. Thus, it was determined that a 3-minute period was sufficient to obtain a representative sample of clinician-client interaction during a therapy session. (GW)

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THE LENGTH OF TIME NECESSARY TO OBTAIN A REPRESENTATIVE SAMPLE OF CLINICIAN-CLIENT INTERACTION

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Purpose

The purpose of the study was to determine the length of time necessary to obtain a representative sample of clinician-client interaction during a therapy session. The Analysis of Behavior of Clinicians (ABC) System, developed by Schubert, Miner, and Till (1973), was the observation system used in collecting data for this study.

Background

The Analysis of Behavior of Clinicians (ABC) System is a twelve category time-based behavioral recording system. By employing this system, a particular behavioral event can be placed into one of the twelve categories. The first eight categories described the actions of the clinician as he attempts to elicit a response from the client, utilizes rewards, modifies his procedures in terms of client's response, uses authority, or fails to attend to the therapy task. The behavioral categories listed as nine through eleven indicate the action of the client as he responds correctly or incorrectly to the clinician and his attempts to avoid responding by irrelevant statements or questions. The final category, number twelve, silence, occurs when both the clinician and the client display no verbal or relevant motor behavior. Table 1 lists the categories and a brief definition of each category.

The ABC System provides a means of recording clinician-client behaviors so that the behaviors can be quantified, analyzed and when appropriate changed. The System provides a method for the clinician and/or supervisor to objectively record what is occurring during a therapy session for immediate analysis or analysis at a later time.

TABLE 1

ANALYSIS OF BEHAVIOR OF CLINICIANS
(ABC) SYSTEM

1.	OBSERVING AND MODIFYING LESSION APPROPRIATELY	Using response or action of the client to adjust goals and/or strategies
2.	INSTRUCTION AND DEMONSTRATION	Process of giving instruction or demonstrating the procedures to be used
3.	AUDITORY AND/OR VISUAL STIMULATION	Questions, cues, and models intended to elicit a response
4.	AUDITORY AND/OR VISUAL POSITIVE REINFORCEMENT OF CLIENT'S CORRECT RESPONSE	Process of giving any positive response to correct client response
5.	PUNISHMENT	Process of giving any negative response to an incorrect client response
6.	AUDITORY AND/OR VISUAL POSITIVE REINFORCEMENT OF CLIENT'S INCORRECT RESPONSE	Process of giving any positive response to an incorrect client response
7.	CLINICIAN RELATING IRRELEVANT INFORMATION AND/OR ASKING IRRELEVANT QUESTIONS	Talking and/or responding in a manner unrelated to changing speech patterns
8.	USING AUTHORITY OR DEMONSTRATING DISAPPROVAL	Changing social behavior from unacceptable to acceptable behavior
9.	CLIENT RESPONDS CORRECTLY	Client responds appropriately, meets expected level
10.	CLIENT RESPONDS INCORRECTLY	Client apparently tries to respond appropriately but response is below expected level
11.	CLIENT RELATING IRRELEVANT INFORMATION AND/OR ASKING IRRELEVANT QUESTIONS	Talking and/or responding in a manner unrelated to changing speech patterns
12.	SILENCE	Absence of verbal and relevant motor behavior

Procedure

Subjects:

Subjects were a group of ten children receiving articulation and language therapy and their student clinicians. The clinicians included nine undergraduate and one graduate student majoring in speech pathology at the University of North Dakota Speech and Hearing Clinic. The clients were drawn from the roster of children receiving articulation and language therapy at the University of North Dakota Speech and Hearing Clinic. The five male and five female clients were between four and seven years of age. The mean chronological age was 62.20 months.

A total of ten clinician-client sessions were studied. All clients were seen on an individual basis. Each session lasted approximately thirty-five minutes.

Equipment and Environment:

Equipment consisted of an Ampex (Model VR 700) videotape recorder utilizing a television camera (Model CC-323). One inch Memorex videotape was used. For seven sessions an Electro-Voice microphone (Model 729SR) was used in conjunction with the videotape recorder. An Electro-Voice microphone (Model 664) was used in the final three sessions. A Setchell-Carson Monitor 23 inch receiver (Model 2100-SD) was used for playback. Two rooms were used. The experimental room was outfitted with a table and two small chairs. On the wall of the experimenter's room adjacent to the experimental room was a one-way mirror which allowed the television camera to "shoot" its pictures without interferring with clinician or client. The videotape recorder was located in the experimenter's room.

Testing Procedures:

A videotape recording was made of a fifteen-minute segment of each therapy session. The videotape recording was begun approximately ten minutes after clinician and client entered the experimental room. The experimenter viewed these ten videotaped samples and recorded data according to the procedures prescribed in the ABC Manual.

Results

Mean Number of Behaviors Per Category:

The mean number of behaviors observed in each of the categories of the ABC System for the five three-minute periods are summarized in Table 2.

TABLE 2

MEAN NUMBER OF BEHAVIORS OBSERVED IN EACH OF THE TWELVE CATEGORIES OF THE ABC SYSTEM FOR EACH THREE-MINUTE SEGMENT

Category	1	2	3	4	5
One	.3	0	.1	0	0
Two	2.4	5.7	2.2	1.4	3.7
Three	18.1	18.6	17.1	16.3	15.1
Four	9.1	9.7	9.6	8.7	8.0
Five	1.6	1.2	1.1	1.2	1.4
Six	.1	.1	.0	.4	0
Seven	4.9	4.2	6.2	6.5	5.1
Eight	2.3	.7	.8	.4	1.4
Nine	9.2	9.6	11.8	11.5	10.2
Ten	4.4	4.0	4.3	4.7	4.7
Eleven	5.6	3.1	4.4	6.1	6.4
Twelve	3.0	3.0	2.4	2.8	4.0

Legend: 1 = 0-3 minutes
2 = 3-6 minutes
3 = 6-9 minutes
4 = 9-12 minutes
5 = 12-15 minutes

Analysis of Variance:

Analysis of variance was performed to determine if there was a significant difference between the behavioral patterns of an individual category when comparing five three-minute segments (Table 3). For the behavioral patterns of each of the twelve categories, no significant difference was found between any of the three-minute periods. This meant that the behavioral patterns, of any three-minute period or the combination of any three-minute segments, were not significantly different from the behavioral patterns of any other three-minute period or combination of three-minute periods.

TABLE 3

SUMMARY OF THE ANALYSIS OF VARIANCE
FOR EACH OF THE TWELVE CATEGORIES

Source of Variation	Degrees of Freedom	Sum of Squares	Mean Squares	F
Category One: Observing and Modifying Lesson				
Attribute to Regression	4	0.68	0.17	.8500*
Deviation from Regression	45	9.00	0.20	
Total	49	9.68		
Category Two: Instruction and Demonstration				
Attribute to Regression	4	113.08	28.27	1.1600*
Deviation from Regression	45	1092.60	24.30	
Total	49	1205.67		
Category Three: Auditory and/or Visual Stimulation				
Attribute to Regression	4	66.11830	16.52957	0.2377*
Deviation from Regression	45	3129.89673	69.55325	
Total	49	3196.01489		
Category Four: Auditory and/or Visual Positive Reinforcement				
Attribute to Regression	4	19.47975	4.86994	0.2783*
Deviation from Regression	45	787.49512	17.49988	
Total	49	806.97485		

TABLE 3--Continued

Source of Variation	Degrees of Freedom	Sum of Squares	Mean Squares	F
Category Five: Auditory and/or Visual Negative Reinforcement-Incorrect Response				
Attribute to Regression	4	1.59999	0.40000	0.1465*
Deviation from Regression	45	122.89972	2.73110	
Total	49	124.49971		
Category Six: Auditory and/or Visual Positive Reinforcement-Incorrect Response				
Attribute to Regression	4	1.08000	0.2700	1.1912*
Deviation from Regression	45	10.19998	0.22667	
Total	49	11.27998		
Category Seven: Clinical Relating Irrelevant Information				
Attribute to Regression	4	36.27995	9.06999	0.2079*
Deviation from Regression	45	1963.49536	43.63322	
Total	49	1999.77515	—	
Category Eight: Authority				
Attribute to Regression	4	22.67989	5.66997	2.1513*
Deviation from Regression	45	118.59972	2.63555	
Total	49	141.27960		
Category Nine: Client Responds Correctly				
Attribute to Regression	4	52.71980	13.17995	0.6091*
Deviation from Regression	45	973.69995	21.63777	
Total	49	1026.41968		
Category Ten: Client Responds Incorrectly				
Attribute to Regression	4	3.47993	0.86998	0.0814*
Deviation from Regression	45	480.69775	10.68217	
Total	49	484.17749		
Category Eleven: Client Relating Irrelevant Information				
Attribute to Regression	4	74.27896	18.56973	0.6585*
Deviation from Regression	45	1268.99609	28.19991	
Total	49	1343.27490		
Category Twelve: Silence				
Attribute to Regression	4	13.91972	3.47993	.3608*
Deviation from Regression	45	433.99609	9.64436	
Total	49	447.91577		

*Not significant at the .05 level.

NOTE: An F ratio of 2.58 was necessary for significance at .05 level.

Cumulative Means Per Category:

The mean number of responses for each of the twelve categories for the five cumulative time periods are presented in Table 4.

Table 4

CUMULATIVE MEANS FOR EACH BEHAVIORAL CATEGORY

Category	1	2	3	4	5
One	.30	.15	.13	.10	.08
Two	2.40	4.05	3.43	2.68	3.08
Three	17.20	17.90	17.63	17.30	16.86
Four	9.10	9.40	9.47	9.28	9.02
Five	1.60	1.40	1.30	1.28	1.30
Six	.10	.10	.07	.15	.12
Seven	4.90	2.55	5.10	5.45	5.38
Eight	2.30	1.50	1.27	1.05	1.12
Nine	9.20	9.40	10.20	10.53	10.46
Ten	4.40	4.20	4.23	4.35	4.42
Eleven	5.60	4.35	4.37	4.60	5.12
Twelve	3.00	3.00	2.80	2.80	3.04

Legend: 1 = First Three Minutes
2 = First Six Minutes
3 = First Nine Minutes
4 = First Twelve Minutes
5 = Total Fifteen Minutes

The largest difference in the behavioral patterns for a single category existed for Category Seven between six cumulative minutes and twelve cumulative minutes. The difference between the two means was 2.90.

Inspection of the means of each cumulative time period indicated that the benavioral patterns within seven of the twelve categories stabilized during the first three-minute period. These categories include (1) Category Three: Auditory and/or Visual Stimulation, (2) Category Four: Auditory and/or Visual Positive Reinforcement, (3) Category Five: Auditory and/or Visual Negative Reinforcement-Incorrect response, (4) Category Six: Auditory and/or

Visual Positive Reinforcement-Incorrect Response, (5) Category Nine: Client Responds Correctly, (6) Category Ten: Client Responds Incorrectly, and (7) Category Twelve: Silence.

The behavioral pattern of Category One, (Observing and Modifying Lesson); Category Eight, (Authority); and Category Eleven, (Client Relating Irrelevant Information) did not stabilize until the second time period. The responses within each of these three categories occurred most frequently during the first three minutes of the fifteen-minute sample.

Summary and Conclusion

Summary:

Experimenters, clinical supervisors, and clinicians spend a great deal of time attempting to analyze the clinical behaviors of a therapy session. The purpose of this study was to determine the length of time necessary to obtain a representative sample of clinician-client interaction during a therapy session when using the ABC System to record clinical behavior.

To accomplish the above stated purpose, the middle fifteen minutes of ten clinician-client therapy sessions were videotaped. Recording was done by studying the fifteen-minute videotape replay of each session. Every three seconds a number was recorded which corresponded to the clinical behavior occurring at that time. This meant that a total of 3,000 observed clinical behaviors were recorded. Clinicians were graduate and undergraduate students conducting articulation and/or language therapy. The clients were children between four and seven years of age receiving speech therapy at the University of North Dakota Speech and Hearing Clinic.

The data were analyzed by analysis of variance. The results of these analyses indicated that no significant differences existed between the behavioral patterns of clinician-client interaction when comparing five three-minute segments of recorded clinician-client interaction.

Conclusion:

The conclusions stated pertain only to articulation and language therapy conducted by student clinicians. References made to any random time period include only the middle fifteen minutes of a thirty-five-minute therapy session.

When using the ABC System to record clinical behaviors, it was determined that a three-minute period was sufficient to obtain a representative sample of clinician-client interaction during a therapy session. This means that experimenters, clinical supervisors, and clinicians could use data from three minutes of therapy for evaluation and be confident that they have a representative sample of clinician-client interaction during that therapy session.

Reference

Schubert, G.W.; Miner, A. L.; and Till, J. A. The Analysis of Behavior of Clinicians (ABC) System. University of North Dakota Press, 1973.